



Appendix B

Written Description In Applicants' '819 Specification For Claims 46-49, 59-61, and 64-68

Applicants' Claim Added	Disclosure in Applicants' Present Specification
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 11, lines 14-26; Pages 18-20.
receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 14.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 5 to page 17, line 12.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 17-18; Page 16, line 5 to page 17, line 12.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 6-15.
refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;	Figure 13; Page 16, lines 6-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 19-23.

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<p>using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and</p>	<p>Page 16, lines 19-23.</p>
<p>extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.</p>	<p>Page 11, lines 21-26; Page 15, lines 5-21.</p>
<p>47. The method of claim 46 wherein</p> <p>data signals emanating from discrete positions on the surface of the molecular array include: fluorescent emission from fluorophores incorporated into molecules bound to features of the molecular array; radiation emitted by radioisotopes incorporated into molecules bound to features of the molecular array; and light emission from chemiluminescent moieties incorporated into molecules bound to features of the molecular array.</p>	<p>Page 6, lines 9-21; Page 7, lines 26-27; Page 8, lines 3-6.</p>
<p>48. The method of claim 46 wherein</p> <p>each image of the number of images comprises an array of pixels, each pixel having a data signal intensity value.</p>	<p>Page 11, lines 21-26.</p>

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<p>49. The method of claim 48 wherein</p> <p>the features of the molecular array are arranged in a rectilinear grid, wherein corner features are selected as marker features, and wherein estimating initial positions of selected marker features within an image of the molecular array further includes:</p>	<p>Figures 7A-7B, 9A-9B, 10, 11, and 12A-12D; Page 12, lines 17-22; Page 13, lines 10-18; Page 13, line 19 to page 14, line 14; Page 15, lines 5-15.</p>
<p>calculating row and column vectors by considering the values of pixels in rows and columns of the image;</p>	<p>Figure 10; Page 13, lines 5-18; Page 17, lines 1-12.</p>
<p>determining a first and last peak in the row and column vectors; and</p>	<p>Figure 10; Page 13, lines 19-23.</p>
<p>using pixel coordinates of the first and last peaks in the row vector to determine horizontal coordinates of the corner features and using pixel coordinates of the first and last peaks in the column vector to determine vertical coordinates of the corner features.</p>	<p>Figures 10 and 11; Page 13, line 24 to page 15, line 4.</p>
<p>59. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:</p>	<p>Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 9, line 25 to page 10, line 10; Page 11, lines 14-26.</p>
<p>a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;</p>	<p>Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8; Page 15, lines 1-12.</p>
<p>a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and</p>	<p>Page 11, lines 17-26; Pages 18-20.</p>

Applicants' Claim Added	Disclosure in Applicants' Present Specification
a computer for executing the computer program.	Figures 1 and 3; Page 6, line 22 to page 7, line 4.
60. The system of claim 59 wherein data signal intensities emanating from discrete positions on the surface of the molecular array include: radiation emitted by radioisotopes incorporated into molecules bound to features of the molecular array; fluorescent emission from fluorophores incorporated into molecules bound to features of the molecular array; and light emission from chemiluminescent moieties incorporated into molecules bound to features of the molecular array.	Page 6, lines 9-21; Page 7, lines 26-27; Page 8, lines 3-6.
61. The system of claim 59 wherein the computer program processes the images of the molecular array and extracts data from indexed features within images of the molecular array by:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 11, lines 14-26; Pages 18-20.
receiving a number of images of the molecular array produced by the scanning component;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 14.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 5 to page 17, line 12.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 17-18; Page 16, line 5 to page 17, line 12.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 6-15.

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refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;	Figure 13; Page 16, lines 6-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 19-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	Page 16, lines 19-23.
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	Page 11, lines 14-26; Page 15, lines 12-18.
64. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:	Page 3, lines 16-19.
(a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;	Page 8, lines 3-16; Page 11, lines 14-26.
(b) calculating an actual result of a function on pixels of the image lying in a second pattern;	Page 16, lines 8-15.
(c) comparing the result of step (b) with an expected result which would be obtained if the second pattern had a predetermined orientation on the array; and	Figure 13; Page 16, lines 13-23.

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(d) when the results of the comparison in step (c) are outside a predetermined difference, then altering the orientation of the second pattern on the array and repeating steps (b) and (c), and repeating the foregoing as needed until the results of the comparison are within the predetermined difference.	Figure 13; Page 16, lines 13-23.
65. The method of claim 64 wherein: the features are arranged in a rectilinear grid and the pattern comprises a rectilinear grid of rows and columns; and step (b) comprises calculating row and column vectors by summing pixels in the rows and columns.	Figures 7A and 7B; Page 16, lines 11-13.
66. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 11, lines 14-26; Pages 18-20.
receiving an image of the molecular array, produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8.
estimating initial positions of selected marker features within the image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 14.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 5 to page 17, line 12.
using the refined positions of the selected marker features to compute a grid for locating features of the molecular array in the image of the molecular array;	Page 15, lines 17-18; Page 16, line 5 to page 17, line 12.
using the initial grid system to locate positions of strong features within the image of the molecular array;	Figure 13; Page 16, lines 6-15.
refining the positions of strong features within the image of the molecular array by analyzing data signal intensity values in regions of the image of the molecular array that contain the strong features;	Figure 13; Page 16, lines 6-23.

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using the refined positions of strong features in the image of the molecular array to calculate a refined system to locate positions of weak features within the image of the molecular array;	Page 16, lines 19-23.
using the refined positions of strong features in the image of the molecular array to calculate a refined grid system to locate positions of local background regions surrounding all strong and weak features within the image of the molecular array; and	Page 16, lines 19-23.
extracting data from strong features, and their respective local background regions, within the image of the molecular array using the refined positions of strong features within the image of the molecular array and extracting data from weak features, and their respective local background regions, within the image of the molecular array using locations for the weak features calculated from the refined grid system.	Page 11, lines 21-26; Page 15, lines 5-21.
67. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 9, line 25 to page 10, line 10; Page 11, lines 14-26.
a scanning component that produces an image of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8; Page 15, lines 1-12.
a computer program that processes the image of the molecular array produced by the scanning component to identify the location of features in the image of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the located features within an image of the molecular array;	Page 11, lines 17-26; Pages 18-20.
and a computer for executing the computer program.	Figures 1 and 3; Page 6, line 22 to page 7, line 4.

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68. A method for evaluating an orientation of a molecular array having features arranged in a pattern, the method comprising:	Page 3, lines 16-19.
(a) receiving an image of the molecular array produced by scanning the molecular array to determine data signals emanating from discrete positions on a surface of the molecular array;	Page 8, lines 3-16; Page 11, lines 14-26.
(b) calculating an actual result of a function on pixels of the image lying in a pattern; and	Page 16, lines 8-15.
(c) altering the orientation of the pattern on the array and repeating steps (a) and (b) as needed until the results of the comparison are within the predetermined difference.	Figure 13; Page 16, lines 13-23.